

A computerized beauty analysis system based on space imaging technology heads a selection of spinoffs for consumer, home and recreational use

## High Tech for Milady's Makeup



**J**ust about everyone has seen the dramatic pictures of Mars and Jupiter and Saturn sent back to Earth by NASA spacecraft. They are not pictures in the photographic sense, but images developed from millions of instrument-acquired data bits relayed in digital form to an Earth station. There the data is processed by sophisticated computers that construct and analyze color pictures of the distant planets.

That technology served as the basis for development of an innovative beauty makeup computer introduced last year by Elizabeth Arden, Inc., a subsidiary of Eli Lilly and Company, Indianapolis, Indiana. Appropriately named "Elizabeth," the system was developed by Elizabeth Arden Research Center,

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*Shown being demonstrated at the L. S. Ayres department store in Indianapolis, Indiana is a computerized beauty makeover system that incorporates NASA imaging and image analysis technology. Called Elizabeth, it was developed by Elizabeth Arden Research Center.*

an element of Lilly Research Laboratories, also located in Indianapolis. It includes a high resolution video camera, a display screen and a complex computer program that simulates the application of cosmetics on a client's video image, providing the client a personalized beauty makeover. Elizabeth allows freedom to experiment with new looks without the necessity for

removing makeup or applying new cosmetics to the client's face.

A makeover session goes something like this:

The client and an Arden makeup artist sit together at a display monitor on which is projected a video image of the client. The computer scans the image to analyze the client's exact skin color, storing this information in its memory as the basis for color recommendations; the computer program is capable of considering thousands of makeup color combinations and their relative color values.

Using a stylus, the artist electronically removes any heavy makeup from the video image. Against a background of the client's actual skin color, the computer displays palettes for all the colors of the various Arden products—foundations, blush, mascara, eye liners, creams, powders and lipsticks. The makeup artist selects and applies the appropriate combinations to create new video images, after discussing with the client her color preferences, lifestyle, desired daytime and nighttime makeup effects, hair and clothing styles.

A four-part split video screen allows comparison of three different makeovers with each other and with the client's original look. The computer remembers how the artist applied colors on the first "new look" video image and, on command, automatically applies new colors selected by the artist on the other images. The computer can zoom in on a small area of the face and display it in magnified view on the monitor, so



*At left, a client and an Arden makeup artist view a four quadrant image (closeup below) of the client's face on a video monitor, comparing the client's actual appearance with three alternative "new looks" created by the artist through computer simulation.*

that artist and client can examine closely the effects of new color combinations and how they were achieved.

A makeover session takes about 30 minutes and costs \$25, which is redeemable with the purchase of Elizabeth Arden cosmetics. For her investment, a client gets three sample looks, instruction in the latest makeup application techniques, and a personalized computer printout for home use.

Dr. John A. Cella, vice president of the Elizabeth Arden Research Center, states that the principal players in the development of Elizabeth were senior mechanical engineer Dr. Thomas A. Cook and the Center's scientists. Looking for ways to analyze the surface of the human skin, they learned of space imaging technologies developed by NASA and others. They contacted the Aerospace Research Applications Center (ARAC), a NASA-sponsored technical information center in Indianapolis, and commissioned ARAC to survey technologies that might be employed in development of a system for measuring the "microtopography"—or profile—along a section of skin. ARAC conducted a comprehensive computer search of technical literature on profilometry and surface roughness measurement and submitted a report detailing

developments by Langley Research Center, Marshall Space Flight Center, non-NASA research organizations, and manufacturers of profilometers and associated equipment. Elizabeth Arden Research Center used the ARAC information as a knowledge base for development of Elizabeth, which took two years and an investment of \$1 million.

In August 1984, Elizabeth Arden launched a demonstration tour that was to continue into 1985 and cover 45 major U.S. markets (two competing systems were introduced shortly thereafter). The Arden system included three work stations, allowing three simultaneous makeovers. Initial demonstrations were very popular;

Elizabeth was booked from morning to night at all three work stations and often there was a sizable waiting list. Comments from cosmetic experts were generally favorable, suggesting that computerized systems might become permanent features of cosmetic makeover and might find further application in such related areas as hair styling and ready-to-wear fashion.

